

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

LISTING OF CLAIMS:

1. (previously presented): A lens moving mechanism for controlling and monitoring movement of an imaging lens, said moving mechanism comprising:
 - (a) a detection part for detecting a plurality of reflectivities;
 - (b) a state indication part having arranged in order thereof first, second and third areas, said first area, including a first reflecting part and a third reflecting part, each repeatedly provided for indicating a first state to said detection part, said second area, including said first reflecting part and a second reflecting part, each repeatedly provided for indicating a second state to said detection part, and said third area, including said second reflecting part and said third reflecting part, each repeatedly provided for indicating the first state to said detection part;
 - (c) a drive part for moving said detection part, relative to said state indication part, in a direction thereof; and
 - (d) an identification part for identifying a position of the lens based upon a change of reflectivity in one scan of moving said detection part within a width of said state indication part along a sequence of indication of said first area and said second area and said third area of said state indication part detected by said detection part.

2. (previously presented): The lens moving mechanism according to claim 1, further comprising a count part for determining a count based upon said movement by said drive part; said identification part identifying said position of the lens based upon one or more of said sequence of indication, said count by said count part, and said direction of movement by said drive part.

3. (previously presented): The lens moving mechanism according to claim 1, wherein: said drive part moves said detection part, relative to said state indication part, from said first area in a direction toward said third area when said state indication part indicates the first state to said detection part; and upon movement of said detection part to a position of predetermined distance, said identification part identifies that (a) said detection part detected the first area before moving said predetermined distance when said detection part detects the second state and (b) said detection part detected the third area before moving said predetermined distance when said detection part does not detect the second state.

4. (previously presented): A moving mechanism, comprising:

- (a) a detection part for detecting one of a first state and a second state;
- (b) a state indication part having, arranged in order thereof, a first area, including a first reflecting part and a third reflecting part, each repeatedly provided for indicating the first state to said detection part, a second area, including said first reflecting part and a second

reflecting part, each repeatedly provided for indicating the second state to said detection part, and a third area, including said second reflecting part and said third reflecting part, each repeatedly provided for indicating the first state to said detection part;

(c) a drive part for moving said detection part in a relative manner to said state indication part; and

(d) an identification part for identifying a position of the lens based upon a change of reflectivity in one scan of moving said detection part within a width of said state indication part along a sequence of indication of said first area and said second area and said third area of said state indication part detected by said detection part;

wherein an area of movement in which said detection part moves in a normal usage state includes the first area, the second area, and a portion of the third area; a movable area, in which said detection part is movable but does not move in said normal usage state, is provided outside said portion of the third area included in said movement area; and the width of the movable area is more than the width of the first area.

5. (previously presented): The moving mechanism according to claim 4, wherein:

when said state indication part indicates the first state to said detection part said drive part moves said detection part, relative to said state indication part, in a direction of the third area from the first area, and

upon movement of said detection part to a position of predetermined distance, said identification part identifies that (a) said detection part detected the first area before moving the

predetermined distance when said detection part detects the second state and (b) said detection part detected the third area before moving the predetermined distance when said detection part does not detect the second state.

6. (previously presented): The moving mechanism according to claim 5, wherein:
said first, second, and third reflecting parts each have two or more different reflecting ratios arranged repeatedly in a direction said detection part moves;
said state indication part includes a count part for counting a number of times the two or more different reflecting ratios repeat when said detection part moves; and
said identification part recognizes the predetermined distance using the number counted by said count part.

7. (previously presented): A lens mirror body with a moving mechanism for moving a lens part in a first, second, and third areas, comprising:

- (a) a drive part for moving said lens;
- (b) a state indication part having, arranged in order thereof, a first area, including a first reflecting part and a third reflecting part, each repeatedly provided for indicating a first state, a second area, including said first reflecting part and a second reflecting part, each repeatedly provided for indicating a second state, and a third area, including said second reflecting part and said third reflecting part, each repeatedly provided for indicating the first state, said state indication part indicating the first state when said lens part is positioned in the

first and third areas and indicating the second state when said lens part is positioned in the second area; and

(c) an identification part for identifying a position of the lens based upon a change of reflectivity in one scan of moving said detection part within a width of said state indication part along a sequence of indication of said first area and said second area and said third area of said state indication part detected by said detection part;

wherein an area of movement of said lens part during a normal usage state includes the first area, the second area, and a portion of the third area; a movable area where said lens part is movable but said lens part does not move while photographing is provided in the third area; and the width of the movable area is more than the width of the first area.

8. (previously presented): In combination, an image device and a movable lens part, comprising:

(a) a detection part for detecting a plurality of reflectivities;

(b) a state indication part, having arranged in order thereof, a first area, including a first reflecting part and a third reflecting part, each repeatedly provided for indicating the first state to the detection part, a second area, including said first reflecting part and a second reflecting part, each repeatedly provided for indicating the second state to the detection part, and a third area, including said second reflecting part and said third reflecting part, each repeatedly provided for indicating the first state to the detection part;

(c) a drive part for moving said detection part, relative to said state indication part, in two or more areas among the first, second, and third areas and driving said lens part therewith; and

(d) an identification part for identifying a position of the lens based upon a change of reflectivity in one scan of moving said detection part within a width of said state indication part along a sequence of indication of said first area and said second area and said third area of said state indication part detected by said detection part.

9. (previously presented): The combination according to claim 8, wherein:

said identification part recognizes a moving direction between a movement in a direction of the third area from the first area and a reverse direction thereto, when the state changes from the second state to the first state, and identifies an area which said detection part detects based on a result of said recognition.

10. (previously presented): The combination according to claim 9, wherein said drive part moves said detection part, relative to said state indication part, in a direction of the third area from the first area, when said state indication part indicates the first state to said detection part, and

when said detection part has moved to a position of predetermined distance, said identification part identifies that (a) said detection part detected the first area before moving the predetermined distance when said detection part detects the second state and (b) said detection

part detected the third area before moving the predetermined distance when said detection part does not detect the second state.

11. (previously presented): The combination according to claim 10, wherein:
said first, second, and third reflecting parts each have two or more different reflecting ratios arranged repeatedly in a direction said detection part moves;
said state indication part includes a count part for counting a number of times the two or more different reflecting ratios repeat when said detection part moves; and
said identification part recognizes the predetermined distance using the number counted by said count part.

12. (previously presented): The combination according to claim 11, further comprising:
a reference value setting part for setting, in advance, a reference value in said count part at the time said detection part moves and said detection part changes from the first state to the second state and from the second state to the first state; and
for setting the reference value as a number counted by said count part when a state which said detection part detects changes.

13. (previously presented): The combination according to claim 12, wherein
said detection part returns to a position in which the state changes at a lower speed than a moving speed towards the predetermined distance if said detection part changes from the first

state to the second state and from the second state to the first state when said lens part moves in a predetermined direction, and

said count part starts to count at the time said detection part returns to the position in which the state changes.

14. (previously presented): The combination according to claim 8, wherein an area of movement of said lens part in a normal usage state includes the first area, the second area, and a portion of the third area; a movable area where said lens part is capable of moving but said lens part does not move while photographing is provided in the third area; and a width of the movable area is more than a width of the first area.

15. (previously presented): The combination according to claim 8, wherein a withdrawn position of said lens part is located at one of a boundary position between the first area and the second area and a vicinity thereof, and

a photographing preparation position of said lens part in preparation for photographing is located at one of a boundary position between the second area and the third area and a vicinity thereof.

16. (previously presented): An image device having a movable lens part, comprising:
a detection part for detecting a plurality of reflectivities;

a state indication part, having arranged in order thereof, a first area, including a first reflecting part and a third reflecting part, each repeatedly provided for indicating the first state to the detection part, a second area, including said first reflecting part and a second reflecting part, each repeatedly provided for indicating the second state to the detection part, and a third area, including said second reflecting part and said third reflecting part, each repeatedly provided for indicating the first state to the detection part;

a drive part for moving said detection part, relative to said state indication part, between the first area and the third area and driving said lens part therewith; and

an identification part for identifying a position of the lens based upon a change of reflectivity in one scan of moving said detection part within a width of said state indication part along a sequence of indication of said first area and said second area and said third area of said state indication part detected by said detection part.

17. (previously presented): A position detection method for detecting a position of a movable lens part in a lens mirror body, comprising the steps of:

(a) moving the lens part in two or more areas among a first area, including a first reflecting part and a third reflecting part, each repeatedly provided for indicating a first state, a second area, including a first reflecting part and a second reflecting part, each repeatedly provided for indicating a second state, and a third area, including a second reflecting part and a third reflecting part, each repeatedly provided for indicating the first state;

(b) detecting the first state and the second state during said moving step; and

when the second state is changed to the first state in said detecting step:

(c) recognizing a moving direction of said lens between a direction towards the third area from the first area and a reverse direction thereto; and

(d) identifying an area detected prior to said moving step based on a result of said recognizing step.

18. (currently amended): A method of identifying a position of a movable lens part in a an image device, comprising:

preparing a first area having a first reflecting part, a second area having a second reflecting part, and a third area having said first reflecting part in order, respectively;

detecting a first reflecting ratio when the moveable lens part is at a start position;

moving the moveable lens from said start position a detection part relative to the moveable lens part in a direction from said first area to said third area when said detected reflecting ratio is of said first reflecting part;

detecting a second reflecting ratio after moving the moveable lens the detection part, wherein said moving of the detection part is one scan within a width of an area constituted by the first, second, and third areas; and

determining that the movable lens part detection part was located at said third area in said start position of the moveable lens, prior to being moved, when said second reflecting ratio remains substantially constant.

19. (previously presented): A method of identifying a position of a movable lens part in an image device as claimed in Claim 18, further comprising:

determining that the movable lens part was located at said first area in said start position, prior to being moved, when said second reflecting ratio changes from said first reflecting part to said second reflecting part.

20. (new): A method of identifying a position of a movable lens part in an image device as claimed in Claim 18, after determining of the location of the detection part, further comprising: identifying where said start position of the movable lens was located, prior to being moved.

21. (new): A method of identifying a position of a movable lens part in an image device as claimed in Claim 18, wherein each of reflecting ratio of the first, second, and third reflecting parts in the first, second, and third areas is respectively constant along a perpendicular direction of the width of the area constituted by the first, second, and third areas.

22. (new): A method of identifying a position of a movable lens part in an image device as claimed in Claim 18, wherein said detection part includes a single sensor and said sensor detects each of reflecting ratio of the first, second, and third reflecting part in the first, second, and third areas.